# Moldova - Value Chain Training

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# Overview

## Identification

**COUNTRY**
Moldova

**EVALUATION TITLE**
Value Chain Training

**EVALUATION TYPE**
Independent Impact Evaluation

**ID NUMBER**
DDI-MCC-MDA-IE-AG-2012-v1.1

## Version

**VERSION DESCRIPTION**
Anonymized dataset for public distribution

## Overview

**ABSTRACT**
The evaluation of the GHS value chain training subactivity wwas designed to measure the extent, if any, to which the training activities improved the productivity and profitability of participants. In particular, the evaluation sought to address the following research questions:

1. What is the impact of GHS value chain training on adoption of new practices and production (yield) within the context of a value chain project? Do these impacts vary by value chain? Were some practices or combinations of practices adopted more than others, and why or why not?

2. Does distance from an GHS value chain training site affect participation in GHS value chain training? What other factors affect participation?

3. To what degree are new practices adopted by value chain participants who do not themselves participate in GHS value chain training activities? Can adoption by nonparticipants be attributed to program ripple effects, rather than broader trends?

4. How does the impact of value chain training on adoption of new practices and production vary with the characteristics of farm operators and farm households?

The impact evaluation of the GHS value chain training subactivity will use a random assignment evaluation design. Eighty potential training sites were randomly assigned to a treatment group (48 sites)--at which training activities will be conducted--or to a control group (32 sites)--at which training activities will not be conducted. Though random assignment will determine where GHS value chain training activities are held, it will not necessarily determine which farmers participate in training. Farmers living in communities that are near control sites will be free to attend trainings held in other communities and may travel to do so; likewise, not all farmers living near treatment sites will attend trainings. If all farmers in treatment sites attended training while all farmers in control sites did not, the impacts of training could be estimated by comparing the outcomes of treatment group farmers to the outcomes of control group farmers at follow-up. If instead some farmers living near treatment sites choose not to attend training while some farmers living near control sites do attend training--which is our expectation--the evaluation approach will have to account for this phenomenon.

The evaluator will be able to measure the impacts of the GHS value chain training subactivity as long as farmers living near treatment sites are more likely to attend GHS value chain training activities than farmers who live near control sites. The estimation approach will exploit the variation in the likelihood of attending GHS value chain training activities induced by random assignment. In particular, the impact of the GHS value chain training subactivity will be estimated using an instrumental variables (IV) framework, using distance from training as an instrument for participation in training. In this context, using an IV approach is not unlike a comparison of farmers in treatment and control sites, except that it adjusts for the fact that some control farmers will participate in GHS value chain training activities and some treatment farmers will not

participate.

The IV approach is credible in this context because training sites were assigned randomly. Because training locations were assigned randomly, we can assume that farmers near treatment sites are the same, on average, as farmers living near control sites (before training activities take place). The IV approach isolates the component of participation that is driven by the instrument (here, distance). The IV estimates can be interpreted as the impact for a key group affected by the training subactivity--farmers who undertake training if it is offered nearby, but not if it is offered far away.

This evaluation design will enable the evaluator to measure the impacts of participating in GHS value chain training activities. Importantly, all value chain participants could benefit from the activities, whether or not they participate in training; furthermore, other activities in the value chain could amplify the benefits of training. Therefore, impacts measured through the evaluation will tell us the impacts of training in an environment in which other value chain barriers are addressed; they will not tell us the full impact of all of the activities or what the impact of training would be in the absence of other, related activities.

**EVALUATION METHODOLOGY**
Randomization

**UNITS OF ANALYSIS**
Farms

**KIND OF DATA**
Sample survey data [ssd]

**TOPICS**

| Topic | Vocabulary | URI |
|---|---|---|
| Agriculture and Irrigation | MCC Sector | |
| Gender | | |

**KEYWORDS**
Moldova, agriculture, farmer training, impact evaluation, randomization

## Coverage

**GEOGRAPHIC COVERAGE**
Data are collected from farmers in communities spread throughout rural Moldova, but only from communities that were considered for training (but may not have necessarily had training offered, such as for communities randomly assigned to the control group).

**UNIVERSE**
The study population includes farm operators in approximately 88 communities--48 treatment communities, 32 control communities, and 8 A-list communities (high priority sites that were purposively selected to receive training). To be included in the study, farmers must have cultivated targeted crops (which, for each community, were identified in advance by the implementer). Across these 88 communities, about 2100 farmers were interviewed in the 2012-2013 FOS.

## Producers and Sponsors

**PRIMARY INVESTIGATOR(S)**

| Name | Affiliation |
|---|---|
| Mathematica Policy Research | |

**FUNDING**

| Name | Abbreviation | Role |
|---|---|---|
| Millennium Challenge Corporation | MCC | |

# Metadata Production

**METADATA PRODUCED BY**

| Name | Abbreviation | Affiliation | Role |
| --- | --- | --- | --- |
| Millennium Challenge Corporation | MCC | | Review of Metadata |

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2014-10-27

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# MCC Compact and Program

**COMPACT OR THRESHOLD**
Moldova

**PROGRAM**
As part of its compact with the government of Moldova, the Millennium Challenge Corporation (MCC) is sponsoring two projects in Moldova: the Transition to High-Value Agriculture (THVA) and Road Rehabilitation projects.

**MCC SECTOR**
Agriculture and Irrigation (Ag & Irr)

**PROGRAM LOGIC**
The Growing High Value Agriculture Sales (GHS) activity, which is implemented by Development Alternatives Inc. as part of the Agricultural Competitiveness and Enterprise Development (ACED) project, is being funded jointly by MCC and USAID. ACED is designed to "increase incomes and generate jobs in rural Moldova by addressing the most critical impediments to the development of a competitive HVA sector" (ACED Contract). The ACED project consists of two components, which are being implemented in parallel: (1) GHS and (2) enterprise development in Transnistria. The first component is, in turn, organized into four subactivities: (1) HVA market development and expansion, (2) training to upgrade production and meet buyer requirements, (3) demand-driven technical assistance, and (4) the improvement of an enabling environment for HVA. The implementation of the GHS activity will use a value chain approach, identifying and addressing binding constraints within particular value chains such as tree fruits or table grapes. Therefore, the program might affect input suppliers, farmers, packers, consolidators, processors, transporters, exporters, and a variety of other value chain actors. Depending on the constraints identified, program activities could range from developing new markets to improving transportation procedures to meeting market standards for quality and appearance of produce to promoting the adoption of new crop varieties. This evaluation focuses on the value chain training subactivity only. The GHS value chain training subactivity aims to help HVA farmers upgrade production and improve the efficiency of post-harvest activities such as processing, transporting, and delivering products to consumers. GHS value chain trainings may involve classroom instruction, demonstration plots, farmer field days, and other methods. The expectation is that farmers will be made aware of the benefits of product upgrading and the available training opportunities and will choose to participate in the trainings. Direct participation in trainings and/or information received from others who attended trainings, together with the simultaneous relaxation of other value chain constraints through other GHS subactivities, is expected to lead to the adoption of innovative production and post-harvest practices. Adoption of these innovative practices will result in increases in production and in product upgrading, so that farmers will increase their sales and receive higher prices for their products. Finally, this is expected to translate into increases in farm revenue, farm profits, and household income. It is anticipated that approximately 4,300 farmers will be trained through the subactivity.

**PROGRAM PARTICIPANTS**
Any farmer could participate in the training sessions, but the expectation was that most participants would be those who farmed nearby and cultivated the crop that was targeted for that particular training session. For the survey that serves as the primary data source in the evaluation, only farmers who cultivated the crop(s) that were expected to be covered by a training session in the community were interviewed.

# Sampling

## Study Population

The study population includes farm operators in approximately 88 communities--48 treatment communities, 32 control communities, and 8 A-list communities (high priority sites that were purposively selected to receive training). To be included in the study, farmers must have cultivated targeted crops (which, for each community, were identified in advance by the implementer). Across these 88 communities, about 2100 farmers were interviewed in the 2012-2013 FOS.

## Sampling Procedure

1. Sample frame
For the sample frame, the survey contractor developed a list of all farm operators cultivating crops in targeted value chains in the 80 study communities (treatment and control) and 8 A-list communities (high priority sites that were purposively selected to receive training). This list included information about farm size and which of the targeted crops the farm operator cultivated. In three communities, the survey contractor did not identify any farmers cultivating targeted crops, so the final sample frame included 77 study communities and 8 A-list communities. Information on total farm size was used to draw separate samples for farms of different sizes.

2. Drawing the sample
For small farms (less than 10 hectares), we drew a random sample of farm operators in targeted value chains in each community. To determine the number of farmers to select in each community and to select farmers, we implemented the following steps:

·We allocated the total small-farm sample across communities in proportion to their size (the number of small-farm operators in targeted value chains). For example, if one community had twice as many treatment small-farm operators as another, we allocated twice as many small-farm operators to that community. To ensure that very small communities were adequately represented and that very large communities do not drive the impact estimates, no community's sample could be below a minimum of 20 or above a maximum of 150 small farmers. Allocating the sample in this way ensured that the sample was balanced across communities but still close to self-weighting.

·We drew the sample in each community using implicit stratification by value chain. We used implicit stratification by value chain (sorting farmers in each community by value chain and selecting the sample so that it was evenly spread across this ordered list) to ensure that the randomly-selected sample provided proportional representation of the different value chains in each community.

For medium (between 10 and 100 hectares) and large (100 hectares or larger) farms, we determined that there were relatively few farms in the value chain training sample frame (174 medium farms and 77 large farms). We therefore attempted to interview all operators of these farms so that we would have precise estimates for these groups.

3. Use of replacements
In some cases, the survey contractor was unable to conduct an interview with a selected farm operator. This occurred for various reasons, such as refusal to participate or ineligibility for the survey (if it was determined that the operator did not cultivate the targeted value chains). To account for this, we developed a list of replacement farmers in each community at the same time that we selected our initial sample. Because all medium and large farmers were selected for the sample, the replacement list included only small farmers. These procedures were designed to help ensure that we reached our target sample sizes for the analysis while maintaining the representativeness of the sample to the extent possible and keeping the replacement procedure reasonably straightforward.

## Deviations from Sample Design

The analysis sample does not include all respondents to the survey. The analysis sample excludes farmers from one stratum that had five treatment communities and three control communities. This stratum was excluded because it contained virtually no control farmers. As a result, the analysis sample includes 902 farmers in 41 treatment communities, 563 farmers in 28 control communities, and 200 farmers in 8 A-list communities.

## Response Rate

The overall response rate was 83 percent in treatment and control communities.

## Weighting

Our sampling strategy attempted to create a survey sample that was as close to self-weighting as possible. However, we still need to apply weights to ensure that our analysis sample is representative of farm operators in the targeted value chains in the treatment and control communities. We constructed weights to account for:

·Differences in sampling probabilities across farmers. We drew the sample of eligible small farmers using implicit stratification in each community. The sampling probability for small farmers in a given community was therefore determined by the fraction of small farmers sampled in that community. Because the community allocations were roughly proportional to the number of eligible farmers in each community (except for small deviations due to the minima and maxima we imposed), this sampling probability was similar for most small farmers. Nevertheless, we need to adjust for the small deviations in this probability. We surveyed all medium and large farmers; therefore, their sampling probability was one. The inverse of the sampling probability was used to obtain a farm-level sampling weight for each farmer.

·Possible differential nonresponse across different types of farmers. To adjust for possible systematic nonresponse among certain types of farmers, we computed response rates within cells that we defined by random assignment stratum, treatment status, and farm size (small, medium, or large). We used the inverse of the response rate to obtain a nonresponse weight for all farmers in a given cell.

We then multiplied these weights to yield preliminary farm-level weights. In addition, to ensure that treatment status was not correlated with random assignment stratum, we reweighted the control farms in each stratum so that their (weighted) sum was equal to the (weighted) sum of treatment observations in that stratum. Finally, we normalized these adjusted weights so that their sum was equal to the number of observations for each farm size group (small, medium, and large).

# Questionnaires

## Overview

The evaluation will draw on three key sources of data.

The first is longitudinal survey data from farm operators living near treatment and control sites that will enable us to track outcome changes over time. This survey, the Moldova Farm Operator Survey, included two questionnaires: one questionnaire for small and medium farms (< 100 Ha), and a separate questionnaire for large farms (>= 100 Ha). The questionnaires were provided in Romanian language (though English translations are available). In some cases, the interview may have been conducted in Russian instead of Romanian. The questionnaire includes numerous domains, including household/farm characteristics, production, sales, farm income, use of agricultural practices, participation in agricultural training, and credit. In general, the questionnaire focused on outcomes from the 2012 agricultural season.

For the impact analysis, these survey data will be linked to a second source, which is implementation data about GHS value chain training activities--such as locations, value chains and topics covered, and dates. The final source is qualitative data from focus groups and interviews.

# Data Collection

## Data Collection Dates

| Start | End | Cycle |
|---|---|---|
| 2013-01-01 | 2013-03-31 | N/A |

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## Data Collectors

| Name | Abbreviation | Affiliation |
|---|---|---|
| ACT Research | ACT | |

# Data Processing

## Other Processing

ACT used double data entry

# Data Appraisal

## Estimates of Sampling Error

Baseline differences between the treatment and control groups were estimated in a regression framework. This regression model enabled us to account for the features of the evaluation design, specifically the stratified random assignment. In addition, because the unit of random assignment is the community, to obtain the correct standard error for the baseline differences we had to account for the fact that outcomes in the same communities are likely correlated. The regression model enabled us to account for this using the “cluster” correction in Stata, with the community as the level of clustering.